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APPLICATION NUMBER: 60/485,609

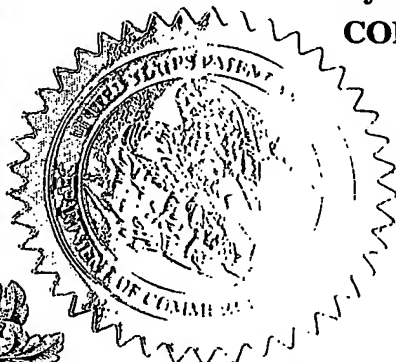
FILING DATE: July 07, 2003

FI 04/00427

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944-003.183

PATENT

Preliminary Classification:

Proposed Class:

Subclass:

NOTE: "All applicants are requested to include a preliminary classification on newly filed patent applications. The preliminary classification, preferably class and subclass designations, should be identified in the upper right-hand corner of the letter of transmittal accompanying the application papers, for example 'Proposed Class 2, subclass 129.'" M.P.E.P., § 601, 7th ed.

17613 U.S. PTO

60/485609

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: HANNU PIRILA, HARRI JOKINEN, KARI PIHL

For: GENERIC SERVICE REQUEST PROCEDURE IN A MULTIMODE SYSTEM

Box Provisional Patent Application

Assistant Commissioner for Patents

Washington, D.C. 20231

COVER SHEET FOR FILING PROVISIONAL APPLICATION
(37 C.F.R. § 1.51(c)(1))

WARNING: "A provisional application must also include the cover sheet required by § 1.51(c)(1) or a cover letter identifying the application as a provisional application. Otherwise, the application will be treated as an application filed under paragraph (b) [nonprovisional application] of this section." 37 C.F.R. § 1.53(c)(1). See also M.P.E.P. § 201.04(b), 6th ed., rev. 3.

NOTE: "A complete provisional application does not require claims since no examination on the merits will be given to a provisional application. However, provisional applications may be filed with one or more claims as part of the application. Nevertheless, no additional claim fee or multiple dependent claims fee will be required in a provisional application." Notice of December 5, 1994, 59 Fed. Reg. 63,951, at 63,953. "Any claim filed with a provisional application will, of course, be considered part of the original provisional application disclosure." Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,209.

NOTE: "A provisional application is not entitled to the right of priority under 35 U.S.C. 119 or 365(a) or § 1.55, or to the benefit of an earlier filing date under 35 U.S.C. 120, 121 or 365(c) or § 1.78 of any other application. No claim for priority under § 1.78(a)(3) may be made in a design application based on a provisional application. No request under § 1.293 for a statutory invention registration may be filed in a provisional application. The requirements of §§ 1.821 through 1.825 regarding application disclosures containing nucleotide and/or amino acid sequences are not mandatory for provisional applications." 37 C.F.R. § 1.53(c)(3).

CERTIFICATION UNDER 37 C.F.R. § 1.10*

(Express Mail label number is mandatory.) (Express Mail certification is optional.)

I hereby certify that this correspondence and the documents referred to as attached herein are being deposited with the United States Postal Service on July 7, 2003 (date), in an envelope as "EXPRESS MAIL POST OFFICE TO ADDRESSEE" service under 37 C.F.R. 1.10, Mailing Label Number EV252883029US addressed to the: Assistant Commissioner for Patents, Washington, D.C. 20231.

Margery B. Hood

(type or print name of person mailing paper)

Margery B. Hood

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"Since the filing of correspondence under § 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will not be granted on petition." Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.

(Cover Sheet for Filing Provisional Application [23-1]—page 1 of 5)

NOTE: "No information disclosure statement may be filed in a provisional application." 37 C.F.R. § 1.51(d). "Any information disclosure statements filed in a provisional application would either be returned or disposed of at the convenience of the Office." Notice of December 5, 1994, 59 Fed. Reg. 63,591, at 63,594.

NOTE: "No amendment other than to make the provisional application comply with the patent statute and all applicable regulations may be made to the provisional application after the filing date of the provisional application." 37 C.F.R. § 1.53(c).

WARNING: A provisional application may be abandoned by operation of 35 U.S.C. § 111(b)(5) on a Saturday, Sunday, or Federal holiday within the District of Columbia, in which case, a nonprovisional application claiming benefit of the provisional application under 35 U.S.C. § 119(e) must be filed no later than the preceding day that is not a Saturday, Sunday, or Federal holiday within the District of Columbia. Notice of April 14, 1995, 60 Fed. Reg. 20,195 at 20,202.

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 C.F.R. § 1.51(c)(1)(i).

1. The following comprises the information required by 37 C.F.R. § 1.51(c)(1):

2. The name(s) of the inventor(s) is/are (37 C.F.R. § 1.51(c)(1)(ii)):

NOTE: "If the correct inventor or inventors are not named on filing a provisional application without a cover sheet under § 1.15(c)(1), the later submission of a cover sheet under § 1.15(c)(1) during the pendency of the application will act to correct the earlier identification of inventorship." 37 C.F.R. § 1.48(f)(2).

NOTE: "The naming of inventors for obtaining a filing date for a provisional application is the same as for other applications. A provisional application filed with the inventors identified as 'Jones et al.' will not be accorded a filing date earlier than the date upon which the name of each inventor is supplied unless a petition with the fee set forth in § 1.17(f) is filed which sets forth the reasons the delay in supplying the names should be excused. Administrative oversight is an acceptable reason. It should be noted that for a 35 U.S.C. 111(a) application to be entitled to claim the benefit of the filing date of a provisional application the 35 U.S.C. 111(a)[J] application must have at least one inventor in common with the provisional application." Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,209.

The term "invention" is typically used to refer to subject matter which applicant is claiming in his/her application. Because claims are not required in a provisional application, it would not be appropriate to reference joint inventors as those who have made a contribution to the "invention" disclosed in the provisional application. If the "invention" has not been determined in the provisional application because no claims have been presented, then the name(s) of those person(s) who have made a contribution to the subject matter disclosed in the provisional application should be submitted. Section 1.45(c) states that "if multiple inventors are named in a provisional application, each named inventor must have made a contribution, individually or jointly, to the subject matter disclosed in the provisional application." All that § 1.45(c) requires is that if someone is named as an inventor, that person must have made a contribution to the subject matter disclosed in the provisional application. When applicant has determined what the invention is by the filing of the 35 U.S.C. 111(a) application, that is the time when the correct inventors must be named. The 35 U.S.C. 111(a) application must have an inventor in common with the provisional application in order for the 35 U.S.C. 111(a) application to be entitled to claim the benefit of the provisional application under 35 U.S.C. 119(e). Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,208.

See 37 C.F.R. § 1.53.

1.	Hannu		Pirila
	GIVEN NAME	MIDDLE INITIAL OR NAME	FAMILY (OR LAST) NAME
2.	Harri		Jokinen
	GIVEN NAME	MIDDLE INITIAL OR NAME	FAMILY (OR LAST) NAME
3.	Karl		Pihl
	GIVEN NAME	MIDDLE INITIAL OR NAME	FAMILY (OR LAST) NAME

(Cover Sheet for Filing Provisional Application [23-1]—page 2 of 5)

3. Residence address(es) of the inventor(s), as numbered above (37 C.F.R. § 1.51(c)(1)(iii)):

1. Kalliorinne 4, 20660 Litttoinen, Finland
2. Vahahidentie 450, 25370 Hiisi, Finland
3. Kihukuja 6, 21210 Raisio, Finland

4. The title of the invention is (37 C.F.R. § 1.51(c)(1)(iv)):

Generic Service Request Procedure in a Multimode System

5. The name, registration, customer and telephone numbers of the practitioner (if applicable) is (37 C.F.R. § 1.51(c)(1)(v)):

Name of practitioner: Francis J. Maguire

Reg. No. 31,391 Tel. (203) 261-1234

Customer No. 004955

(complete the following, if applicable)

☐ A power of attorney accompanies this cover sheet.

6. The docket number used to identify this application is (37 C.F.R. § 1.51(c)(1)(vi)):

Docket No.: 944-003.183

7. The correspondence address for this application is (37 C.F.R. § 1.51(c)(1)(vii)):

Francis J. Maguire

Ware, Fressola, Van Der Sluys & Adolphson LLP

755 Main Street, P.O. Box 224, Monroe, Connecticut 06468

8. Statement as to whether invention was made by an agency of the U.S. Government or under contract with an agency of the U.S. Government.
(37 C.F.R. § 1.51(c)(1)(viii))

This invention was made by an agency of the United States Government, or under contract with an agency of the United States Government.

☒ No.

☐ Yes.

The name of the U.S. Government agency and the Government contract number are: _____

9. Identification of documents accompanying this cover sheet:

A. Documents required by 37 C.F.R. §§ 1.51(c)(2)-(3):

Specification:

No. of pages 5

Drawings:

No. of sheets 1

B. Additional documents:

☐ Claims:

No. of claims 2

Note: See 37 C.F.R. § 1.51.

☐ Power of attorney

☐ Small entity statement

☐ Assignment

☒ Other Abstract 1 pg

NOTE: Provisional applications may be filed in a language other than English as set forth in existing § 1.52(d). However, an English language translation is necessary for security screening purposes. Therefore, the PTO will require the English language translation and payment of the fee mandated in § 1.52(d) in the provisional application. Failure to timely submit the translation in response to a PTO requirement will result in the abandonment of the provisional application. If a 35 U.S.C. 111(a) application is filed without providing the English language translation in the provisional application, the English language translation will be required to be supplied in every 35 U.S.C. 111(a) application claiming priority of the non-English language provisional application. Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,209.

10. Fee

The filing fee for this provisional application, as set in 37 C.F.R. § 1.16(k), is \$~~160~~0.00, for other than a small entity, and \$75.00, for a small entity.

☐ Applicant is a small entity.

NOTE: "A . . . statement in compliance with existing § 1.27 is required to be filed in each provisional application in which it is desired to pay reduced fees." Notice of April 14, 1995, 60 Fed. Reg. 20,195, at 20,197.

11. Small entity statement

☐ The statement(s) that this is a filing by a small entity under 37 C.F.R. §§ 1.9 and 1.27 is(are) attached.

12. Fee payment

☒ Fee payment in the amount of \$ 160.00 is being made at this time.

☐ No filing fee is to be paid at this time. (This and the surcharge required by 37 C.F.R. 1.16(l) can be paid subsequently).

13. Method of fee payment

☒ Check in the amount of \$ 160.00

☐ Charge Account No. _____, in the amount of \$ _____

A duplicate of this Cover Sheet is attached.

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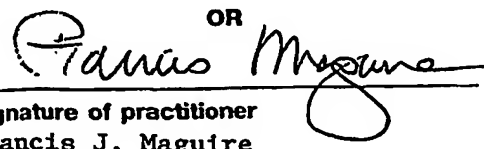
Date: July 7, 2003

Reg. No.: 31,391

Tel.: (203) 261-1234

Customer No.: 004955

Signature of submitter

OR


Signature of practitioner

Francis J. Maguire

Ware, Fressola, Van Der Sluys & Adolphson
(type or print name of practitioner)

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P.O. Address

Monroe, Connecticut 06468

PATENT APPLICATION SERIAL NO. _____

U.S. DEPARTMENT OF COMMERCE
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FEE RECORD SHEET

07/11/2003 RHEBRAHT 00000133 60485609

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PTO-1556
(5/87)

U.S. Provisional Patent Application of
HANNU PIRILA, HARRI JOKINEN and
KARI PIHL

relating to a
GENERIC SERVICE REQUEST PROCEDURE
IN A MULTIMODE SYSTEM

Exp. Mail No. EV 252883029 US

Generic service request procedure

Background of the Invention

1. Technical Field

5 The present invention relates to telecommunications and, more particularly, to mobile telecommunications terminals and utilization of network services.

2. Discussion of Related Art

10 Multimode terminals are getting more and more popular. Multimode terminals are capable of operating on different system modes (using different radio access technologies and/or able to attach to different core networks). Examples of different system modes are GERAN, WCDMA, TDMA, AMPS, CDMA 2000, WLAN, Bluetooth etc. Multimode networks may support different types of interworking between the system modes supported by the terminal.

15

 Currently the terminal already provides some information about its capability in different system modes, making the network aware which services the terminal can support in different system modes. An example is a GERAN terminal indicating its capabilities; in addition to the capabilities for GERAN access technology, also if it supports WCDMA and/or CDMA 2000 radio access technologies. The terminal may have quite different support for services depending on the serving system mode. For example, simultaneous packet and circuit switched service is only possible if both the GERAN network and terminal support dual transfer mode (DTM) while this service is always supported by a GERAN/UTRAN dual mode terminal when served by

20 UTRAN. Similarly, if the GERAN network does not support high speed data, then the circuit switched data rate is limited to 9.6 kbit/s for GERAN access while a higher data rate is likely available through WCDMA and an even higher data rate through WLAN. GERAN again might support a location service when any of the other modes supported by the multimode terminal do not support this service. However, when the

30 terminal requests a service, the request is limited to the services supported by the terminal in the currently serving system mode, additional restrictions may be set if the network indicates non-support for some specific network capabilities.

In 3GPP standardisation, different vendors are proposing different ways to solve specific problems where GERAN capabilities are not enough to support a service and thus inter-system change from GERAN to UTRAN is proposed. For example, 3GPP TSG-SA WG1 #21 (Sophia Antipolis, France June 7-11, 2003) proposes to allow a
 5 UE that has CS multimedia capability and that is camping on a GERON cell but is also within UTRAN coverage to setup a CS multimedia service using a UDI 64 kbit/s bearer in UTRAN. Another example is 3GPP TSG-SA2 #33 (also June 7-11, 2003) which introduces a proposal for a new procedure for dual CN connection where a UMTS/GSM terminal roaming in GSM in the neighbourhood of UTRAN coverage is
 10 allowed to request a dual CN connection to the BSS, even if the MS is not Class A or if DTM is not supported by the MS and/or the BSS, in order to indicate that a handover or a cell change order to UTRAN should be favoured by the BSS.

Currently there already exist other similar problem cases for other services as well,
 15 and the above mentioned proposed solutions by different vendors are not applicable for solving the problems for these other cases but are only directed to narrow and particular problems. The difficulty in these solutions is that they are targeted to a specific problem and are not suitable for solving the issue in generic way (though, these proposals are not actually acceptable to solve the mentioned problems). In this
 20 invention disclosure it is shown that a generic mechanism should be applied into the 3GPP specifications to solve the problem in a generic way.

Disclosure of Invention

25 The generic problem solved is the generic case where a multimode terminal is served by one system and the terminal supports a service that is not supported by the serving system, but likely would be supported by another system (supported by the multimode terminal with the other system's coverage available). For example, currently a GERAN/UTRAN dual mode terminal cannot request a specific service that it supports
 30 only in the UTRAN mode, when it is served by a GERAN network.

The invention is that a generic service request signalling is defined where a multimode terminal is allowed to request any service that it supports in any of the modes (e.g., access technology like GERAN / UTRAN / CDMA2000 / BlueTooth /

WLAN / ...) supported by the terminal. The network may then decide to move the terminal to other system if possible and necessary in order to establish the service. The terminal capability indication for each system mode mostly exists already.

- 5 It should be mentioned that it would be advantageous for the network to indicate support for the generic service request signalling so that terminal would not send these requests in case the serving network would not support it.

10 The advantages of the invention are that terminal could start the service regardless the serving system capabilities and the full control is left to the network.

The terminal would not need to scan the available modes and reselect the system that supports requested service.

15 Best Mode for Carrying Out the Invention

1. Making service request independent from the serving system mode

Since a multimode terminal may support a wide range of services where some specific services are not supported by the mobile in all system modes and some specific services may not be requested from the serving system, it is possible that the terminal (user) does not reach the service it would be able to support, and a service that would be available at the current terminal location through other system modes.

25 This problem can be solved by a generic service request procedure that allows the terminal to request any of the services it supports, in any of the system modes it supports, through the current serving system.

30 This generic service request can be implemented in several different ways. Normally the network should indicate support for generic service requests in order to avoid compatibility problems for new terminals in legacy networks. In case a generic service request is allowed, the terminal may:

- Use existing signalling messages defined for the serving system, but with service request parameters that exceed the terminal capabilities in the serving system mode. An example being 64 kbit/s circuit switched data that is

supported by GERAN but may not be supported by the terminal in GERAN mode. Then the multimode terminal may be allowed to request 64 kbit/s data when served by a GERAN network, even if it does not support this service through GERAN. The network may then decide to hand over the dual mode terminal to be served by the UTRAN system (when UTRAN coverage and capacity is available locally), and the requested service may then be established through UTRAN. Alternatively the network may deny this service and the network may then negotiate a service on the currently service system that would be supported both by the terminal and network and would be considered acceptable by the terminal.

- A specific signalling container may be built allowing the serving network to direct the terminal service request to one or more other systems. Optionally an identifier is added to each service request so that the serving system is able to direct each particular service request container only to the corresponding system. Alternatively, all parallel service request containers are sent to each other systems and the other systems identify which container carries a service request for itself. In this case it is sufficient that the terminal builds the service request in a way that is understood by each of the other systems for which the request shall be intended. The serving system then does not need to understand in detail any of the terminal capabilities on other systems, it is sufficient that the service request is transferred to the other system and interpreted locally. If the other system is able to serve terminal with the requested service, the terminal would be moved to be served by this system and the requested service would be established there. One potential solution would be that the target system responds with a handover command or a network controlled cell reselection order that makes the terminal to move to the desired system.
- The serving system capability may be extended so that it is able to decode also service requests for services that are not supported by it (not supported at all by the system mode of the serving system or just not implemented by the serving system). This allows a first decision locally by the serving system on the terminal service request. The serving system may initiate a handover request (or similar) towards another system or it may directly decide to offer an alternative service that is supported both by the terminal and the current serving system and which it expects to be adequate for the concerned terminal.

2. Network control for system mode reselection when required to serve any specific service

Several proposals have been made to allow the terminal to select the serving system according to the service the terminal (user) is requesting at each moment. A terminal based system mode selection has several serious disadvantages. Examples of the disadvantages are that:

- The terminal is not in advance aware which service is best supported by each alternative system.
- 10 - The terminal is not aware of the load of the alternative system, and then it may be that the alternative system is not at all able to serve the terminal, even with a lower quality of service, while the original system could have been able to serve the terminal with a compromise on quality of service.
- System mode changes generate normally significant signalling load that
- 15 should be avoided when possible.
- System mode changes normally result to short gaps where the MS is unreachable from any of the locally available systems.

Clearly it is strongly preferable that the terminal operates on the system where a multimode network has put the terminal with different network and cell reselection parameters. The terminal should continue signalling through the serving system as normally and the control for system selection should be left for the multimode network. The solution to maintain full control at the multimode network while still making it possible for the terminal to be served with a service it wants and which it only supports on a non-serving system mode, or that is only supported by a non-serving system, can be reached by a generic service request procedure that allows the terminal to request a service that it supports under any of the supported system modes, and the generic service request can be sent to the serving network, at least if indicated being allowed by the serving network.

30

We Claim:

1. Method for use in a network device, comprising the steps of:

5 the network device receiving generic service request signalling from a
multimode terminal for requesting any service that the terminal supports in any of
various modes supported by the terminal but which is not supported by the receiving
network device, and

 the network device deciding to move the terminal to another system if possible
and necessary in order to establish the service.

10

2. Method for use in a multimode terminal device, comprising the steps of:

 the multimode terminal device sending generic service request signalling to a
network device for requesting any service that the terminal supports in any of various
modes supported by the terminal but which may not be supported by the receiving
15 network device, and

 the terminal device changing to another system if possible and necessary in
order to establish the service.

Abstract

Generic service request signalling is defined where a multimode terminal is allowed
5 to request any service that it supports in any of the modes (e.g., access technology like
GERAN / UTRAN / CDMA2000 / BlueTooth / WLAN / ...) supported by the
terminal. The network may then decide to move the terminal to other system if
possible and necessary in order to establish the service. The terminal capability
indication for each system mode mostly exists already.

10

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